Renewable wind energy industry set to benefit from increased forecasting accuracy

11 February 2015 - The Met Office has announced the launch of its latest version of Virtual Met Mast™ which is set to offer major increases in accuracy and high resolution modelling in addition to several other significant improvements.

The new version of Virtual Met Mast™ uses advanced downscaling processes in order to produce accurate, long-term site and hub height-specific wind climatologies, specifically for the European onshore and offshore wind energy market. The data and resultant reports can then be used to support site search, selection and development activities across a range of wind energy projects.

One of the key innovations is the development of an 'intelligence function' that uses statistical techniques to build a knowledge base of correction factors between model, reanalysis and monitored data across a range of sites. It then applies these learnings in future to minimise resulting biases in wind speed results for new sites. This process is able to capture very detailed interactions between data making it particularly effective in regions with complex terrain.

Michelle Spillar, Head of Renewables at the Met Office said: "The wind energy industry in Europe is facing an ever-increasing number of challenges when it comes to developing energy profitably and at a cost which is competitive to other energy sectors. Downward trends in market support and incentive mechanisms, coupled with rising costs for land acquisition, development and operations are making margins tighter and more difficult to manage.

"It is therefore becoming increasingly important to estimate long term asset and site performance to establish the potential for the success of future projects. The improved Virtual Met Mast™ is a market leading European solution that can be used with confidence to estimate long term average wind speeds for new sites as well as providing a reliable long term reference for correlation - all this helps ensure renewable wind projects are on a trajectory for success and can be progressed and developed with confidence."

Major features include

- Major improvements in accuracy and uncertainty statistics
- A wind frequency distribution analysis including Weibul scale and shape parameters
- High resolution modelling maintains atmospheric integrity down to specific site location
- Up to 35 years of hourly time series data is available with high temporal consistency
- Includes inter-annual and decadal variability which ensures greater understanding of the potential volatility of the wind at any site (UK only)
- Offers wind shear, gust and turbulence values in accordance with international standards
- A localised wind map is included in the report to highlight the variation of wind speeds across the site

Benefits

- High accuracy will benefit all sites and in particular those with more marginal wind conditions and in more complex terrains
- Reduced uncertainty offers added confidence and lower risk for all stakeholders
- Accurate wind assessments in countries or regions where no reliable wind data is available
- Independent wind assessment for input to power yield and due diligence reports
- Flexibility to deliver data tailored to customer requirements

Uses

- Time series data is used by experts as the basis for long term wind assessments
- The standard report is available for medium wind markets. It can be generated both with and without site data depending on the scale of the project and has become a bankable resource for this industry
- Classification of sites to support turbine selection for warranty purposes
- Used in conjunction with site data to produce corrected wind reports and data (Virtual Met Mast™ Plus)
- Input to site design modelling and complex fluid dynamic software systems

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